

## **Managing Financial Risks in India - A Note**

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While financial markets have been fairly developed, there still remains a large extent of segmentation in the market and non-level playing field among participants, which contributes to volatility in asset prices. This volatility is exacerbated by the lack of liquidity in the secondary markets. In the above setting, the note examines the importance of a risk management exercise for the market participants and preconditions required to promote risk management practices. The note explores various alternative options for the market participants to manage risks and provides some suggestions for developing a market for derivatives in India.

Since 1992, significant changes have been introduced in the Indian financial system. These changes have infused an element of competition in the financial system, marking the gradual end of financial repression characterised by price and non-price controls in the process of financial intermediation. While financial markets have been fairly developed, there still remains a large extent of segmentation of markets and non-level playing field among participants, which contribute to volatility in asset prices. This volatility is exacerbated by the lack of liquidity in the secondary markets. The purpose of this paper is to highlight the need for the regulator and market participants to recognise the risks in the financial system, the products available to hedge risks and the instruments, including derivatives that are required to be developed/introduced in the Indian system.

The financial sector serves the economic function of intermediation by ensuring efficient allocation of resources in the economy. Financial intermediation is enabled through a four-pronged transformation mechanism consisting of liability-asset transformation, size transformation, maturity transformation and risk transformation.

Risk is inherent in the very act of transformation. However, prior to reform of 1991-92, banks were not exposed to diverse financial risks mainly because interest rates were regulated, financial asset prices moved within a narrow band and the roles of different categories of intermediaries were clearly defined. Credit risk was the major risk for which banks adopted certain appraisal standards.

Several structural changes have taken place in the financial sector since 1992. The operating environment has undergone a vast change bringing to fore the critical importance of managing a whole range of financial risks. The key elements of this transformation process have been the deregulation of coupon rate on Government securities, substantial liberalisation of bank deposit and lending rates, a gradual trend towards disintermediation in the financial system in the wake of increased access of corporates to capital markets, blurring of distinction between activities of financial institutions, greater integration among the various segments of financial markets and their increased order of globalisation, diversification of ownership of public sector banks and emergence of new private sector banks and other financial institutions, and the rapid advancement of technology in the financial system.

Thus, risks to financial markets in India have arisen mainly out of the process of deregulation of interest rates, disintermediation, integration of different segments of markets and initiation of globalisation process. How have the market participants in India internalised these changes? What risk perceptions do they have? What are the avenues available for managing

risks? While addressing these issues, this note is divided into three sections. [Section I](#) deals with the challenges facing the Indian financial institutions in terms of managing various types of risks. [Section II](#) discusses the products currently available for Asset-Liability Management (ALM) including derivatives - their stage of development, present structure and architecture in the context of risk management. [Section III](#) explores some policy issues.

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## Section I

### Managing Risks in Indian Financial System

There are essentially four types of financial risks that market participants have to cope with on a regular basis. First, there is a credit risk in that a party to a contract may default. Second, there is a market risk resulting from unfavourable market movements. Third, there is an interest rate risk arising from adverse movements in interest rates. Fourth, there is a liquidity risk, which arises from the inability to sell in the secondary market.

There are three different but related ways of managing financial risks. The first is to purchase insurance. This is a viable option only for management of certain types of financial risks such as credit risk. The second approach refers to ALM. This involves careful balancing of assets and liabilities so as to eliminate net value changes. ALM is an exercise towards minimising exposure to risks by holding the appropriate combination of assets and liabilities so as to meet certain objectives of the firm (such as achieving targeted earnings, while simultaneously minimising risk). The third approach, which can be used either in isolation or in conjunction with the first two options, is hedging. Hedging is similar to ALM, but while ALM involves on-balance sheet positions, hedging involves off-balance sheet positions. The most basic derivative products used for hedging are forwards, futures, swaps and options.

For many Indian banks, investment in securities represents a strategy of deployment of liabilities. In the absence of a variety of products, flexibility for ALM is reduced and banks tend to book profits or show losses on the securities portfolio regardless of the underlying liability. While Floating rate bonds are not popular in the absence of proper benchmarks, the repo market is still in the nascent stage. Moreover, short selling of securities is not permitted and revolving underwriting facility is hindered by certain regulatory constraints. Further, the provision that banks can have only one prime lending rate (PLR) and another long-term PLR constrains effective application of ALM.

#### *Repos*

One of the most important factors that investors take into consideration is liquidity. In thinly traded markets, investors pay a significant cost for entry and exit if they require liquidity for short periods. Currently, only banks and PDs can create liquidity in Government securities through repos. Repos in PSU and corporate bonds is still a non-starter. This leaves out many participants who may have large surpluses on average but are liquidity strapped in the short-

term. Further, the only type of repo prevalent in India is buy/sell back repo between two parties, although international markets are used to a variety of repos, which provide greater flexibility to market participants. It is imperative now that the demat process is hastened, so that a greater number of players can borrow and lend through repos.

### *Short Positions*

The Indian bond market is one-sided. Activity in the market increases when interest rates are expected to come down and falls when interest rates are expected to increase. Market participants are not permitted to short-sell securities in view of the prohibition of forward trading in securities since June 1969 through a Government notification. Repeal of this Notification will require the formalisation of the respective regulatory roles of RBI and SEBI in the debt markets. One of the possibilities could be to allow controlled short-selling initially by PDs with adequate safeguards. For instance, the maximum amount that can be shorted can be specified. Once short-selling of securities is permitted, investors can hedge their positions without having to offload securities in the market.

### *Term Structure of Prime Lending Rate*

Currently, banks are permitted to announce one PLR and another term PLR for maturity over three years. This creates inflexibility in ALM due to duration mismatches. Permitting banks to fix and announce PLRs across the term will allow them the flexibility of offering floating interest rates on deposits and give them the option of pegging their PLR to deposit rates.

Another important factor that accentuates interest rate mismatches of banks is that while a large portion of the deposits of public sector banks are term deposits carrying fixed rates of interest, banks are not permitted to charge fixed rate of interest to their borrowers. Thus, six months after sanction of say a one-year term loan at PLR, if a bank reduces its PLR, it will have to correspondingly reduce the interest rate on the loan for the remaining period of the loan. Freedom to extend fixed rate loan to borrowers could be desirable for facilitating ALM of banks and also from the borrowers point of view, particularly for projects involving infrastructure financing. Eventually, banks should be given the freedom to fix their own lending rates without any PLR prescriptions.

### *Revolving Underwriting Facility (RUF)*

RUF is a medium term commitment on the part of a bank to underwrite continuous issue of short-term notes by a corporate. RUF is a flexible product enabling the corporate to raise resources at a favourable rate as compared to its normal borrowing rate. While RUF will obviously attenuate the process of disintermediation, it provides an avenue for banks to generate fee-based income in addition to providing an additional tool for its ALM. Of course, there are risks involved for a bank which provides the underwriting facility. These are the credit risk and liquidity risk.

There is a need to review existing regulations to permit banks to offer RUF subject to capital adequacy and all other prudential norms as applicable to loans. The existing ceiling of 15

per cent of an issue for underwriting etc. can be dispensed with for RUF and the facility be brought within the overall single and group borrower limit.

## **Section II**

### **Financial Derivatives and Risk Management**

Derivatives are financial instruments that derive its cash flows and, therefore, its value by reference to an underlying instrument, index or reference rate. Derivative instruments can be classified as asset-liability based instruments, forward based contracts, swaps, options or some combination of the above. Such combinations may create synthetic financial instruments whereby the combined characteristics mirror those of another financial instrument. Further, derivatives may be classified as exchange-traded or over the counter. Exchange traded derivatives tend to be more standardised and offer greater liquidity than OTC contracts, which are negotiated between counterparties and tailored to meet each other party's needs.

#### **Asset Liability Based Derivatives**

Certain derivatives can be structured from existing assets or liabilities. For example, cash flows from certain assets can be disaggregated and repackaged into derivative securities designed to meet specific investor needs. These securities are often referred to as 'strips' for bond transactions and tranches for mortgage or loan related products. In addition, a wide variety of structured debt products with embedded options have been offered in the OTC market. Two of the more common asset liability based derivatives that could be introduced or developed in the Indian markets are Asset Backed Securitisation and Strips.

#### *Asset Backed Securitisation*

There are two broad definitions of securitisation. The first is the usage in connection with replacement of traditional bank lending by securities in the capital market. It is also used in the narrower sense to refer to the issuance of asset backed securities, which are tradable instruments supported by a pool of loans or other financial assets. The interest and principal payments on the loans provide the cash flows required to pay interest and principal to investors. Securitisation has many advantages.

First, Asset Backed Securitisation provides the issuer with a more flexible, cheaper and rapid means of managing the fluctuating stock of underlying assets. Second, it removes the assets from the balance sheet of the originator, thus liberating capital or other liabilities for other uses such as expansion of assets, etc. Certain conditions, however, are required to be satisfied to qualify for off-balance sheet treatment in the absence of which the assets concerned will be consolidated with the seller's balance sheet for risk asset ratio purpose. Third, securitisation replaces receivables with funds. Fourth, the transformation of previously illiquid assets into tradable securities enables originating institutions to make more flexible use of their balance sheets. In particular, greater liquidity of traded assets permits better management of credit risk through reduction of excessive concentration in particular areas or diversification of exposure into sectors with more attractive risk/ return profiles. Fifth, asset backed securitisation enables

originators to remove the market risk resulting from interest rate mismatches by transferring it to investors.

The most widely used assets in off-balance sheet securitisation are housing loans, consumer and trade receivables, student loans, automobile loans and credit card receivables. Banks, financial institutions, non-bank finance companies and housing finance companies are usually sellers of asset backed securities. Internationally, mutual funds, insurance companies, pension funds and corporates are buyers of this product.

There is a vast scope for asset backed securitisation in India. Already, quite a few deals have been concluded with respect to residential mortgages, auto loans and trade/bills receivables in India. Credit enhancement has been in the form of cash collateral in a designated bank account in favour of the trustee of the transaction. A few short-term transactions in trade/bills receivables were originated by NBFCs. Credit enhancements have been in the form of letters of credit from select banks which undertake to pay in the event of default on the underlying asset.

Prohibitive stamp duties, lukewarm investor participation and inadequate foreclosure laws have hindered the growth of this market in India. Internationally, insurance companies, trusts and mutual funds are major investors in asset backed securities. In India, while insurance companies and trusts are not allowed to invest in securitised paper, there are restrictions on investments of mutual funds. Inadequate foreclosure laws increase the risk in respect of mortgage backed securities in case of default. Stamp duties on sale of assets vary across states. High stamp duties on sale of assets have resulted in all such securities deals being structured in the form of transfer of beneficial interest in the asset and not the title. Stamp duties are also an issue in the case of securitisation of mortgage and other secured loans. A question that needs to be answered is whether transfer of beneficial interest construes true sale, with legal transfer of assets to be affected only in the event of bankruptcy of the seller and the special purpose vehicle having recourse to the same remedies against borrowers as the originators. Finally, asset backed securitisation will gain momentum only if there is a liquid secondary market for debt. It is also necessary to clarify certain matters from the regulatory angle particularly from the viewpoint of capital adequacy where the transaction cannot be construed as a "true" sale. Treatment of credit enhancement provided by financial institutions' transactions need also be addressed from this consideration. Credit enhancement in certain circumstances may have to be deducted from capital or treated as a guarantee.

### *Strips*

Strips, an acronym for separate trading of registered interest and principal of securities are the different components of a conventional bond separated and traded as distinct securities. A 10-year gilt, for example is strippable into 20 half-yearly coupons and one final redemption. The end result is a series of 21 zero coupon securities, with maturities of 6, 12, 18 months and so on. Strips are very useful instruments for participants in the financial markets. Paradoxically, they can offer safety and stability to one type of investor and be highly speculative for others. Unlike bonds that pay annual or half-yearly dividends, the total return on a strip is known at the time of purchase. Thus, strips give certainty of return, by removing reinvestment risk, but are much more sensitive to changes in yield. While the attractiveness of Strips to speculators arises from their

greater leverage, the certainty component of Strips is attractive to those with long-term investment horizons. Through investment in a portfolio of strips, an investor could thus, in principle, achieve more easily a desired pattern of cash flows.

A major advantage of strips is that it helps development of a zero coupon risk-free yield curve. This could be used as a benchmark for pricing floaters and other derivative instruments. For banks, strips offer the special advantage of a trading instrument and an instrument for duration management. The Government Securities market in India has the necessary size to make Strips a success. There are, however, several structural issues that need to be addressed before introducing strips.

First, currently there are too many issuances of Government Securities in a year with no uniformity in coupons and interest payment dates. Second, the issuance of various maturities of Government Securities need to be standardised so that coupon payment and redemption dates fall due on a certain fixed dates in a year. This will allow for fungibility of coupons and provide necessary liquidity to the market. Third, a lot depends on the pricing of Strips. This would entail changes in the present auction system so that the coupon is preannounced and the price is determined at the cut-off yield. Finally, the infrastructure needed to facilitate strips and the clearing and settlement process need to be sorted out.

### *Credit Derivatives*

A number of traditional methods (such as operational limits on credit lines, loan provisioning, portfolio diversification and colla-teralisation) and innovative methods (such as loan securitisation and separately capitalised derivatives) are already available internationally to manage credit risk. These are considered to be significantly less flexible on their own than the techniques available in the area of market risk. Capital adequacy guidelines have also encouraged financial institutions to put greater emphasis on the risk and return characteristics of their assets and liabilities. Credit derivatives, make it possible to evaluate and trade credit risk without liquidating the original product. They enhance flexibility and reduce costs. They allow banks to hedge the credit risk of a loan without having to assign the loan and with no risk to deteriorate the relationship. Credit derivatives, therefore, offer banks the advantage of improving the flexibility of their credit structures without imposing constraints on their client relations. This enhances efficient balance sheet management and adds to traditional hedging instruments.

Credit derivatives are a new market segment in the area of financial derivatives. They are financial products which transfer either specific or all the inherent risks of a credit position from one partner in the transaction viz., the risk seller, to another viz., the risk buyer, against payment of a premium. They are a new management tool, which facilitates evaluation and transfer of credit risk. Credit derivatives thus serve to evaluate and separate risks and to make them fungible. The areas of application are the traditional credit and bond business as well as risk and portfolio management. Credit derivatives deal with credit risk or risk of debtor default as pure debtor risk and not general market risk. The hedge refers directly to a particular debtor. The credit risk is typically debtor specific. The focus is placed on individual solutions designed to fulfil customer-specific wishes with an eye on their balance sheets. The products are hardly standardised, and there is practically no secondary market trade, even in the USA.

Internationally, capital treatment has yet to be clarified and standardised documentation is not available for most of the products

Credit derivatives fall into two basic categories - swap-based (i.e. created on the basis of swap structures) and option-based. The swap-based versions include credit-swaps, basket credit swaps or notes and total return swaps. The option-based versions include spread options and sovereign risk options.

In sum, a bank can reduce credit risk without straining its relationship with a client or losing him altogether. However, in the Indian context, it may be feasible to experiment with credit default swap to begin with. By doing credit swaps, it is possible to take on additional credit lines. Credit swaps make it possible to take over risk without having to grant a loan. Under Indian conditions, credit swaps provide a mechanism for an institution like IDFC to take on the credit risks of banks. The market for credit derivatives is attractive for banks as well as institutional investors. Creditors can eliminate credit risk in part or entirely without documenting this to the market. At the same time, other institutional investors can gain access to credit markets, which would otherwise not be open to them.

Before this, the credit market will get a fillip if existing instructions on banks giving guarantees are reviewed. Scheduled commercial banks cannot currently give guarantees on debt instruments or give a loan/credit facility based on the guarantee of another bank or financial institution. The rationale is that the institution taking the credit risk should also fund the loan. There is an apprehension that the bank giving the loan will rely on the guarantee rather than on the viability of the project. There is need for a rethinking on the issue as a financial guarantee separates the credit risk from funding risk. It enables sound banks particularly international banks operating in India with skills to appraise projects, particularly infrastructure projects, but not in a position to fund these projects due to lack of rupee resources. Banks with resources that do not have the risk appetite for such project can invest in these guaranteed instruments. Financial institutions are giving such guarantees but banks are unable to do so. Banks can be permitted with certain prudential regulations such as treating these guarantees on par with loans for purposes of capital adequacy and exposure norm. Similarly, each bank could lay down a limit on the total amount of such guarantees issued to ensure that it does not over-extend itself.

### **Derivatives for Interest Rate Risk Management**

In the absence of MIS and slow pace of computerisation, the RBI has suggested traditional gap analysis as a suitable method to measure interest rate risk. The analysis begins with constructing a maturity gap report. This report categorises assets and liabilities according to the time remaining to their repricing or maturity in specific time periods known as 'repricing' buckets. The time buckets range from one month and beyond one year. Categorising assets and liabilities lacking definite time frames into specific time periods (buckets) varies according to institution. RBI guidelines permit banks to make reasonable assumptions while categorising these items.

The maturity gap approach enables a bank to measure for each time period or bucket the positive gap or the negative gap. A positive gap (asset sensitive) indicates that more assets than

liabilities will reprice in a given time period. In this case earnings tend to increase as interest rates increase because more assets than liabilities reprice at higher rates. A negative gap indicates (liability sensitive) that more liabilities than assets will reprice in a given time period. If rates increase, earnings will be adversely affected. However, the gap approach does not adequately address the rate sensitivity of longer term fixed rate instruments, the value of which can change dramatically without affecting short term interest income. Duration analysis can complement gap analysis and can be used to analyse the financial condition of a bank with a complicated series of repricing mismatches. Duration analysis can add significant insights into the interest rate risk exposure of an institution. However, a caveat will be in order. Duration analysis presupposes the existence of a parallel yield curve.

Interest rate risk is an aspect of normal banking operations that has become increasingly important since the deregulation of interest rates. Interest rate exposure associated with a mismatching of asset and liability maturity or duration gap can be controlled using a variety of techniques, which fall into the general classification of direct and synthetic methods. Direct restructuring of the balance sheet relies on changing the contractual characteristics of assets and liabilities to achieve a particular duration or maturity gap. On the other hand, the synthetic method relies on instruments such as futures, options, interest rate swap and customised agreements to alter balance sheet exposure. Since direct restructuring may not always be possible, the availability of synthetic methods adds a certain degree of flexibility to the asset/liability gap management process. This flexibility can be further enhanced if new financial instruments used to hedge or profit from interest rate changes are allowed to be introduced in the Indian market.

In the absence of exchanges, derivative products which are widely used overseas in managing interest rate risk are forward rate agreements and interest rate swaps.

#### *Forward Rate Agreements*

The forward rate agreement is an off balance sheet contract between two parties under which one party agrees on the start date (or trade date) that on a specified future date (the settlement date) that party will lodge a notional deposit with the other for a specified sum of money for a specified period of time (the FRA period) at a specified rate of interest (the contract rate). The party that has agreed to make the notional deposit has thus sold the FRA to the other party who has bought it. On the settlement date, a cash settlement is made by one party with the other calculated by reference to the difference between the contract rate and the 'settlement rate'. The settlement rate is the market rate of interest prevailing on the settlement date for the FRA. The instrument has been developed out of the forward cash market. The advantage of FRAs over the forward cash market is that no principal sums are transferred on the settlement date and thus banks can easily adjust their interest rate profiles without the credit risk associated with a cash deposit or having to affect their liquidity positions.

Since the payment is made at the beginning of the FRA period rather than the end (which is the normal basis on which interest rates are quoted), the actual cash settlement is computed as the present value of the amount that would normally be received at the end of the period. This present value is calculated according to a formula agreed at the outset of the contract and is



normally the end of period amount discounted for the FRA period at the settlement rate.

FRA's can be used for risk management or for trading. FRA's allow a borrower or lender to 'lock in' an interest rate for a period that begins in the future thus effectively extending the maturity of its liabilities or assets. Banks can use FRA's as an integral part of their management of interest rate risk with a typical FRA book consisting of a portfolio of FRA's of varying periods and currencies. FRA's are an important product that banks can market to their corporate customers as part of a cash management service. When a customer takes out a FRA, the bank will be left with an open interest rate position that it can close with an FRA in the inter-bank market or carry against its existing interest rate profile.

There are risks associated with FRA's. Banks are exposed to credit risk if the counterparty fails before settlement date for the replacement cost of the FRA. There is also the risk of the counterparty failing to deliver on settlement date. The potential loss in this case is the ultimate profit of the FRA. The principal sum being a notional sum is not at risk. The direction and amount of the FRA settlement are determined by interest rate movements. The bank is, therefore, exposed to market risk if the instrument is not fully matched. The market risk can generally be managed by including the interest rate positions within a financial institution's overall system for measuring and controlling interest rate exposure. As for credit risk, banks can mitigate the credit risks by taking margins.

The pricing of FRA's reflects the costs of alternative ways of constructing a similar hedge. For example, the price of a six against nine-month FRA will depend in particular on interest rates on six and nine month deposits. They are usually priced from the inter-bank yield curve.

As per Forward Rate Agreement, British Banks Association Rules, the cash settlement of the profit & loss is computed as follows :

$$\text{Profit/Loss} = \text{Notional Amount} \times \frac{(R_{fx} - R)}{100} \times \frac{\text{Gap}}{\text{Basis}}$$
$$\frac{1 + R_{fx}}{100} \times \frac{\text{Gap}}{\text{Basis}}$$

Where,

R is the dealt rate

R<sub>fx</sub> is the fixing rate

Gap is the number of days applying to the FRA period. 'Basis' is the relevant money market rate basis (360/365 days). The fixing rate is usually the official fixing of a money market period and internationally the most commonly used benchmark is the LIBOR.

FRA's can be most easily priced from a zero coupon yield curve. From the zero curve one can derive the zero coupon rate at settlement of the FRA. The seller of FRA notionally places deposit or gives loan at a certain rate of interest. The seller seeks protection against downward

slide in the interest rates. The buyer of FRA notionally accepts deposits or borrows at a certain rate of interest in order to obtain protection against upward movement in interest rates.

Indian banks may use FRA under different circumstances. For example, if Gap analysis shows that in a particular bucket (say within one year during which interest rate risk is actively managed) risk sensitive assets (RSA) are greater than risk sensitive liabilities (RSL) and a bank expects downward movement in interest rate (which will squeeze its net interest income (NII)), it can sell FRA for RSA-RSL corresponding to the time bucket. If interest rates fall, the squeeze in NII will be approximately compensated due to FRA. On the other hand, if  $RSL > RSA$  and the bank expects interest rates to rise, it can buy FRA for RSL-RSA for the corresponding time bucket. Depending upon the RSA and RSL patterns in different time buckets and a view on interest rate movements a set of FRAs can be put in place to hedge against interest rate risk. A bank may also use FRA to lock in return or its borrowing cost. There may be occasions when a bank expects substantial inflow in 3 months from its recovery drive but does not expect loan demand to pick for another 6 months. In such a scenario, in order to lock in a targeted return, the bank may sell FRAs. Similarly, a bank which is funding longer-term loans by rolling over shorter-term liabilities may buy FRAs to lock in borrowing cost.

A bank, which has liabilities of longer duration, but due to capital adequacy or other considerations lends a certain amount of its liabilities in the inter-bank market for three months, can use FRAs to cover its exposure, to movements in short-term rates. To hedge its exposure this bank can sell a series of FRAs so as to match its liabilities and lock in to a spread. Similarly, another bank which has limited access to funds with maturities greater than six months and has relatively longer term assets can prefer a contract for a six against twelve month FRA and thus, increase the extent to which it can match asset and liability maturities from an interest rate perspective. In both these situations, the banks can choose to buy some FRAs depending on their market views and their perception of periods of uncertainty.

Corporates too can make use of FRAs. A company which is a big issuer of commercial paper with a tendency to roll over the CPs on maturity can at a particular point, when interest rates are low, buy a series of FRAs to hedge its funding cost.

### *Interest Rate Swaps*

Interest rate swaps are over-the-counter (OTC) contracts between two counterparties for exchanging interest payments for a specified period based on a notional principal amount. The notional principal is used to calculate interest payments but is not exchanged; only interest rate payments are exchanged.

An interest rate swap can achieve any of the following:

- a) alter the cost of existing or generally available borrowing from fixed to floating rate or vice versa.
- b) convert the rate of return on an asset from fixed to floating or vice versa.

- c) generate a profit (or a loss) from interest rate fluctuations (if the swap is not matched with an asset or borrowing.)

The principal uses to which swaps are put flow from these three specific uses. The swap market has thus seen development of many types of swap and swap related products. Each product can be tailored to the needs of the institutions that seek to use swaps to alter the interest and currency profiles of portfolios and balance sheets. The two basic forms of IRS are the fixed-versus floating swap and the basis swap.

Banks and other financial intermediaries enter into swap transactions for trading purposes or for hedging purposes. When it acts as an intermediary for other parties, a bank arranges and administers the swap transaction. The bank acts as the principal to both sides of the swap and thus both sides rely on the bank rather than each other for performance of the deal. A bank may use swap transactions for trading purposes by taking a view on the future interest rates. A bank that expects interest rates to increase might enter into a swap deal to pay a fixed rate of interest and to receive variable amounts.

Indian banks use swaps as an integral part of their management of interest rate risk. A bank can use an interest rate swap to achieve a closer match between its interest income and interest expense, thereby reducing its interest rate risk. The decision to use swaps will depend on the needs of customers and the size of the open interest rate position that it is prepared to run. A bank may use swap transactions to hedge existing assets and liabilities. If a bank finds itself with a preponderance of fixed rate assets and variable rate liabilities, an increase in interest rates could have a significant negative impact on earnings. To hedge against this possibility, the bank might enter into a series of swap contracts so as to effectively convert its variable rate liabilities into fixed rate obligations. The swaps will be profitable if the interest rates go up and will be unprofitable if they go down; however its overall earnings will be stable regardless of the direction in which rates move. Although banks tend to manage their swap portfolios on a deal by deal basis, larger banks often engage in portfolio hedging or management.

The market convention for pricing interest swaps is to quote the fixed-rate in terms of a basis point spread over the Treasury rate for receiving the floating interest rate index flat (no basis points are added to or subtracted from the floating rate). Swaps are so priced that at origination the expected present value of the fixed-rate payments equals that of the floating rate payments. Therefore, an upfront cash payment is not necessary.

Banks are exposed to both interest rate risk and credit risk in swap transactions. The payments and receipts in a swap transaction are determined by interest rate movements. Therefore, if not fully matched, the swap creates an interest rate risk. If the counterparty fails during the life of the contract, the bank is at risk for the replacement cost of the swap. There is also a liquidity risk associated with opening a position because the market is illiquid and hence difficult to close out.

A variety of interest products may also be included in the swap portfolio such as swaps with embedded options, cancelable or extendible swaps, interest rate caps and floors and other products. In contrast to a futures hedge, which fixes a specific interest rate, an options hedge, is

similar to the purchase of interest rate insurance. For the price of the option, the buyer is protected against an adverse movement in interest rates while preserving the benefits of a favorable movement in rates. Different options will provide different types of insurance. If the future cash position is certain, the best hedge will typically involve use of the futures contract/FRA. If the cash flow is less certain, the options hedge will be less risky and likely to be preferred. An options hedge is generally more expensive than a futures hedge but retains some of the benefits of a favourable movement in the cash market.

When interest rate swaps/FRAs are introduced in India, banks/ FIs/NBFCs should be required to maintain capital on the basis of current exposure method prescribed in the guidelines. Similarly, capital adequacy for market risks including interest rate risks will also have to be gradually introduced. The standardised approach can be adopted as a transitional measure. As the market develops, a supervisory framework for obtaining information will become necessary. The following are some of the other dimensions :

- (i) It is necessary that banks and other participants having positions in these products mark them to market on a daily basis in due course. Banks should internally fix prudential limits on unmatched positions, which should be reported to RBI.
- (ii) Capital allocation for such products should be a function of both the credit exposure as well as volatility of the underlying asset.
- (iii) Prudential norms are required to regulate the extent of leverage that such products provide.
- (iv) Certain taxation issues arise such as whether the swap payments and receipts are treated as other income or interest income, and the tax implications if transactions are gross settled or net settled.

### **Section III**

#### **Issues and Implications**

Risk management has become an integral part of financial activities of banks and other market participants. These risks cannot be ignored and have to be managed by market participants as part of ALM or hedged. In this context, creating an environment that promotes risk management assumes critical importance. This requires addressing certain policy and institutional issues in developing a market for risk-taking, risk sharing and risk-diversification in India.

First and foremost, a well-developed repo market constitutes an important pre-requisite for promotion of risk-management practices among market participants. Regulatory gaps and overlaps in debt markets need to be sorted out quickly to facilitate the repeal of the 1969 Notification which bans forward trading in securities. Market players can then be permitted to short sell securities, which will go a long way in aiding the process of ALM for banks and other market players. There is a case for encouraging RUF in Indian market. Regulatory issues

regarding the RUF need to be reviewed in this context.

Indian conditions are suitable for introduction of asset-liability based derivatives such as Strips and Asset Backed Securities, specifically from two viewpoints. First, they provide an ALM tool and secondly, strips facilitate a risk-free zero-coupon yield curve which can be used for pricing other instruments. Introduction of a market for strips requires meticulous planning on aspects such as issue of benchmark securities, fungibility, auction system, settlement procedures and general infrastructure. There is a vast scope for asset based securitisation in India, despite its constraints. A few deals have already been concluded with respect to residential mortgages and auto loans. However, inhibitive stamp duties, inadequate foreclosure laws and lukewarm investor response come in the way of development of this market.

There is also scope for introduction of credit-default swaps in India. Credit swap offers advantages of hedging credit risk without impairing the relationship with the borrower. Under Indian conditions, this instrument provides a mechanism for an institution like IDFC to take on the credit risks of banks. As a prelude to permitting credit derivatives, there seems to be a case for permitting banks to extend guarantee or lend on the guarantee of another bank within prudential limits.

FRAs/IRS enable users to lock into spreads. The Reserve Bank of India has already announced its intention to introduce interest rate swaps. In addition, the market for forward rate agreement can also be developed. A prerequisite for the development of rupee derivatives in India is the existence of a term yield curve which would enable efficient pricing of derivatives. A benchmark rate should be a good proxy for the actual borrowing costs in the market. The rate should be transparent and non-manipulative. The overnight call money market is the only liquid market in the Indian financial system. An overnight reference rate has already emerged through National Stock Exchange and Reuters. Therefore, to begin with, the Mumbai Interbank Overnight Average (MIONA) swap, settled against a call benchmark, can be considered as a starting point. Once, the term money market develops, other benchmarks will emerge.

Active use of derivatives require the existence of a term money market for six-months to one year tenure. It is widely accepted that there is no clearly defined interbank term money structure in India beyond the overnight rates. Statutory pre-emptions on inter-bank liabilities, somewhat regulated interest rate structure, cash credit system of financing, high degree of volatility in the call money rates, availability of sector specific refinance, and absence of money market instruments of varying maturities have been some of the factors that affect the development of a term money market.

The Reserve Bank of India has gradually removed many of the constraints in the term money market. Freeing of interest rates in the call money market, replacement of the system of cash credit by the loan system, deregulation of term deposit rates and lending rates, bringing down the minimum period of term deposits to 15 days, freedom to banks to determine their own penalty structure for premature withdrawal of deposits and exemption of interbank liabilities from the maintenance of CRR and SLR, subject to the statutory minimum of 3 percent and 25 per cent, respectively, for all categories of bank liabilities are some of the important steps in this direction.

A major reason for the lack of term money market is the absence of the practice of ALM system among banks for identifying mismatches in various time periods. The recent RBI guidelines on ALM are expected to contribute to the evolution of an ALM system, which would help banks to take decisions to lend on a term basis and also offer two-way quotes in the market. This would act as a catalyst for development of a term money market. Banks should also be given freedom to announce PLR across the term curve so as to give them an additional tool to match their duration gaps. Risk management will be further enhanced when banks are permitted to extend fixed rate loans to borrowers.

A deep cash market is imperative before derivative products can be introduced in order to prevent derivatives market from transmitting volatility to the cash market. This requires orderly movement of the interbank call money market and also raises the need for a liquidity adjustment facility from RBI to facilitate the development of a corridor of interest rate through repo and reverse repo mechanisms. This would obviate the need for having various refinance facilities and impart necessary stability to interbank reference rate.

FRAs are particularly useful from a risk management perspective to hedge short term interest rate risk. FRAs are good indicators of forward money market curves and as such are the best indicators of market participants' expectations of future deposit rates which can be an useful input in monetary management. These products enable issuers to access those markets (whether fixed or floating) where they possess a comparative advantage, and swapping the interest payments in the market of their choice. However, given the current structure of the Indian Rupee money market and its characteristics, introduction of derivatives should be undertaken in a gradual manner. A suggested sequencing pattern could be to develop market for FRA and IRS first before moving on to options.